PRINT-High-tech goggles bring clarity to vertigo

OSF patient who struggled for decades gets answers, treatment

When *Dancing with the Stars* performer Val Chmerkovskiy was recently hospitalized in Peoria, Illinois, because while on tour, he experienced intense dizziness and a spinning sensation. Doctors determined he was suffering from benign paroxysmal positional vertigo or BPPV — the same condition that has affected Bloomington, Illinois, resident David Williams for decades.

Chmerkovskiy's issue was caused by loose "crystals" in his inner ear and forced him to miss a tour performance before undergoing treatment, including the Epley maneuver. His experience highlights a condition that can strike suddenly, and it's one that OSF HealthCare specialists say is often treatable once properly diagnosed.

Williams, now 82 and retired as professor emeritus from Illinois State University where he taught and served as an administrator. He taught courses in music psychology and arts technology, a program he created in the late 1970s--now the new School of Creative Technologies. Williams remembers the first time vertigo hit him.

"Well in my 40s one night, I woke up and I thought I was having a heart attack because everything was spinning, and I had cold chills. I was in cold sweats."

The episode turned out to be BPPV, a condition caused when tiny calcium crystals inside the inner ear move into the wrong part of the balance canals. The displaced crystals send confusing signals to the brain about the body's position, creating the sensation that the room is spinning.

At the time, Williams said treatment options were limited. He couldn't do anything except take motion sickness medication and sit in a comfortable chair and focus on an object to minimize the spinning sensation.

For years, Williams' symptoms would appear unexpectedly, sometimes during travel or in the middle of the night. Eventually, he was referred to vestibular therapist Kristine Cottone, PT, DPT, MBA, manager of rehab services at OSF HealthCare in Bloomington, who specializes in diagnosing and treating balance disorders.

Cottone says the tools available to therapists have changed dramatically over the past two decades. When she first started, she used lenses that magnified eyes in a dark environment. Then, technology progressed, and cameras were put inside. Then, there were infrared video googles.

Goggles bring diagnosis into view

Today, Cottone says the latest goggles from Vestibular First have advanced features that analyze subtle eye movements linked to balance disorders and allow for a more exact diagnosis. Software was developed so therapists can record, play back, zoom in and slow down video. Therapists can see involuntary eye movements to determine which part of the inner ear is causing the problem and guide treatment maneuvers designed to reposition the misplaced crystals.

"So, it has changed significantly in the sense that it has made it very clear what the problem is and I think 20 years ago, sometimes we were guessing based on test position and symptoms," says Cottone. "And I think that's why we had a longer trajectory of recovery than we're seeing now."

For Williams the technology provided something he didn't have for years – an explanation and a plan when he has an episode for his chronic condition.

"A good part of it is from the old days, when there wasn't much you could do but take the meclizine [motion sickness medication] and wait it out. That, you know, with the right treatment, the right diagnosis, and the right exercises, you can fix it pretty quick."

And that's what he does – makes an emergency appointment with OSF Rehabilitation, and the goggles can pinpoint the canals impacted and whether the issue is crystals that are free floating or stuck. Once identified, Williams is given maneuvers he can do at home.

"I put my own name to them. Like, there's the slam dunk I call it. And so, I would have to hit my head as hard as I could on the pillow to juggle the crystals loose and then rotate my head in a certain way and do that like twice a day to get the crystals unstuck."

Cottone said most cases of BPPV improve after just a few therapy sessions using repositioning maneuvers similar to the Epley technique Chmerkovskiy received. Williams' case is less typical. His vertigo has returned multiple times over the years and can involve different canals in either ear, making diagnosis more complicated. Still, he says the progress in treatment has been significant.

Positional vertigo is most common in individuals ages 50-70, with women being two to three times more likely to be affected, according to Cottone. For people with recurring symptoms, she recommends having your vitamin D levels checked because crystals in your ears are made up of calcium carbonate, and vitamin D helps them stay healthy and bind.

The Bertec system

OSF Rehabilitation also uses Bertec, a virtual reality platform equipped with force plates that sense where a person is in space. A half-dome screen creates an immersive environment with a variety of balance activities, tests and games, giving people real-time feedback on their movements, even when their feet remain still.

Cottone says the Bertec system can be helpful even when a person doesn't have a diagnosis. It allows physical therapists to understand weaknesses in the vestibular system that are leading to balance issues.

"The Bertec really helps us identify, 'Well, I think you're having trouble in a busy environment, or you're having trouble when you're scrolling on your phone or reading on your Kindle because the ear is weak and the eyes are working overtime,'" Cottone explains. "So, it allows us to see where in the system the weakness is, and from there, we can put the patient through fairly lifelike circumstances to rehab them."

Cottone emphasizes that people should never brush off dizziness, because many causes are treatable, and in some cases, the symptom can signal a more serious underlying medical condition.

An evaluation by OSF Rehabilitation can rule out vestibular issues, and you can be referred to another medical specialist.

Transformative care close to home

Cottone says the latest generation of equipment is transforming care, even in the many smaller, more rural communities served by OSF.

"Having this equipment, especially the goggles and then the Bertec, is an added plus. It really allows community members to stay within their community and get the best care possible and very thorough care. And then if we're not the ones that can help you with whatever is going on, we'll at least know that and we'll be able to then move you on within OSF to the right provider."

For Williams, knowing help is available has made a major difference.

He now encourages others experiencing the sudden spinning sensation to seek medical care instead of waiting for it to pass. He stresses it's also important to rule out more serious conditions that could be causing your symptoms.